CLAIMS

1. An integrally molded surface fastener (10) of synthetic resin in which a number of fine engaging elements (2), which engage/disengage a mating pile piece, are molded integrally on a surface of a flat base member (1), be characterized in that

each engaging element (2) comprises a pillar portion (21) having a predetermined height and an engaging head (22) composed of first and second engaging portions (22a, 22b), which extend from a top end of the pillar portion (21) along the surface of the base member (1) in a first direction (x) and in a second direction (y) different from the first direction, and the first and second engaging portions (22a, 22b) have different shapes.

2. The integrally molded surface fastener according to claim 1, wherein the first engaging portion (22a) is constituted of a pair of wing-like thin plates which intersect with the second engaging portion at right angle and extend in opposite directions across the top end of the pillar portion (21).

3. The integrally molded surface fastener according to claim 2, wherein a front end of the first engaging portion (22a) substantially droops toward the surface of the base member.

4. The integrally molded surface fastener according to claim 2, wherein the second engaging portion (22b) is constituted of one or more engaging pieces which substantially intersect with the first engaging portion (21a) at right angle

across the top end of the pillar portion (21) and extend in opposite directions each other.

5. The integrally molded surface fastener according to claim 1 or 2, wherein the second engaging portion (22b) is constituted of a hook piece and a front end of which is curved toward the base member (1).

6. The integrally molded surface fastener according to claim 1, wherein the pillar portion (21) has a horizontal section which intersects with the first and second engaging portions (22a, 22b) in a same direction.

7. The integrally molded surface fastener according to claim 1 or 2, wherein a central portion of a top face (22c) of the engaging head (22) is slightly dented.

8. The integrally molded surface fastener according to claim 1, wherein there is a difference in distance between a distance from the surface of the base member (1) to a front end of the first engaging portion (22a) and a distance to a front end of the second engaging portion (22b).

9. The integrally molded surface fastener according to claim 1 or 2, wherein the first engaging portion (22a) is disposed perpendicularly to a molding direction of the base member (1) while the second engaging portion (22b) is disposed in parallel to the molding direction of the base member (1).

10. A method of production for the integrally molded surface fastener according to claim 1, be characterized by

comprising:

rotating a cylindrical drum (100) in one direction, the cylindrical drum (100) having a number of preliminarily molded element molding cavities (101) each composed of a main cavity (101a) which is open in a circumferential face and extends linearly up to a predetermined depth and a second engaging portion molding cavity (101b) which is not open in the circumferential face and is branched from halfway of the main cavity (101a) and extends in a molding direction or in a lateral direction with respect thereto;

injecting molten resin (11) continuously to the circumferential face of the cylindrical drum (100), molding the base member (1) along the circumferential face while molding a number of preliminarily molded elements (2') on a back side of the base member (1) such that they erect upright;

peeling a belt-like preliminarily molded surface fastener (10') from the circumferential face of the cylindrical drum (100), the preliminarily molded surface fastener (10') having the preliminarily molded elements (2') on the base member (1) which moves carried by the circumferential face of the rotating cylindrical drum (100);

feeding the preliminarily molded surface fastener (10') peeled continuously to a with-heat pressing portion (150); and

pressing at least a preliminarily molded first engaging portion (22a') erected linearly of the preliminarily molded

elements (2') erected integrally from the surface of the base member of the carried preliminarily molded surface fastener (10') with heat, melting and deforming into a flat wing-like thin plate so as to mold the first engaging portion (22a) successively.

11. The method of continuous production for the integrally molded surface fastener according to claim 10, further comprising:

melting and deforming the preliminarily molded first engaging portion (22a') into the flat wing-like thin plate by pressing the with-heat pressing portion (150) with heat; and

melting and deforming a top end of a preliminarily molded second engaging portion (22b') at a time.

12. A continuous production device for the integrally molded surface fastener according to claim 1 be characterized by comprising:

a cylindrical drum (100) rotating in one direction and having a number of preliminarily molded element molding cavities (101) composed of a main cavity which is open in a circumferential face and extends up to a predetermined depth and a second engaging portion molding cavity (101b) which is branched from halfway of the main cavity (101a) and extends in a molding direction;

a continuous injecting unit (110) which injects molten resin (11) continuously to the circumferential face of the

cylindrical drum (100) so as to mold the base member (1) along the circumferential face, and molds a number of preliminarily molded elements (2') on a back side of the base member (1) such that they are erected upright;

a take-up roller (103) for peeling a belt-like preliminarily molded surface fastener (10') from the circumferential face of the cylindrical drum (100) continuously, the preliminarily molded surface fastener (10') having the preliminarily molded elements (2') on the base member (1) which moves carried by the circumferential face of the rotating cylindrical drum (100); and

a with-heat pressing portion (150) which presses with heat at least a preliminarily molded head (22') erected linearly of the preliminarily molded elements (2') erected integrally from the surface of the base member of the peeled preliminarily molded surface fastener (10') so as to melt and deform into a wing-like thin plate to mold the first engaging portion (22a) successively.

13. The continuous production device according to claim 12, be characterized in that the with-heat pressing portion (150) comprises an internal heating unit containing a carrying face (150a') for the preliminarily molded surface fastener (10') and a rotation roll (150b) containing a rotation shaft which is included in a plane above and in parallel to the carrying face (150a') and extends in a direction perpendicular to a

feeding direction of the preliminarily molded surface fastener (10'), and

a gap (G1) between a bottom end position of the heating rotation roll (150b) and the carrying face (150a') is set smaller than a dimension gained by adding a setting dimension in a vertical direction of the engaging head (22) to a sum of dimensions in a vertical direction of the base member (1) and the pillar portion (21).

14. The continuous production device according to claim 12, be characterized in that the with-heat pressing portion (150) comprises a carrying face (150a') for the preliminarily molded surface fastener (10') and is disposed above the carrying face (150a'), and further comprises a with-heat pressing member (150d) having an inclined face (150e) in which a gap between a bottom face thereof and the carrying face (150a') decreases gradually, and

a gap (G2) of a narrowest portion between the carrying face (150a') and the inclined face (150e) is smaller than a dimension gained by adding a setting dimension in a vertical direction of the engaging head (22) to a sum of the dimensions in a vertical direction of the base member (1) and the pillar portion (21).